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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

ARF 2004-003

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on September 29, 2006

Signature Daniel C. Abeles

Typed or printed name Daniel C. Abeles

Application Number

10/751,349

Filed

January 5, 2004

First Named Inventor

Kirkland D. Broach

Art Unit

3663

Examiner

Daniel Lawson Greene

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

applicant/inventor.

assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

attorney or agent of record.
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Signature

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412-566-1295

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September 29, 2006

Registration number if acting under 37 CFR 1.34 _____

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.



*Total of 1 forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: application of:) Group Art Unit 3663
KIRKLAND D. BROACH et al.) Examiner: Daniel Lawson Greene
Serial No. 10/751,349) Entitled: NUCLEAR FUEL ASSEMBLY
) DEBRIS FILTER BOTTOM NOZZLE
Filed: January 5, 2004)
Attorney Docket No. ARF 2004-003)
September 29, 2006)
Eckert Seamans Cherin & Mellott, LLC
600 Grant Street, 44th Floor
Pittsburgh, PA 15219

MAIL STOP - AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

In response to the Final Office Action mailed on July 18, 2006 for the above-captioned application, Applicants respectfully submit this request under the Pre-Appeal Brief Conference Pilot Program. In accordance with the requirements that are recited in the notice for the Pilot Program in the Official Gazette dated July 12, 2005, Applicants hereby make the arguments set forth below.

The Office is hereby authorized to charge any required fee or credit any overpayment to Eckert Seamans Cherin & Mellott, LLC, Deposit Account No. 02-2556.

It is near impossible to thoroughly and fully rebut the Examiner's many objections and rejections set forth in a twenty-two page Office Action in a five page brief as required by the Pre-Appeal Brief Conference Rules. However, Applicants will attempt to provide a condensed summary of the Examiner's objections and rejections and concisely point out how they are overcome.

Oath/Declaration

In paragraph 1 of the Office Action, the Examiner reaffirmed his position of not giving any patentable weight to the original and supplemental 132 Declarations of Michael Y. Young as being opinionated Declarations. In the original Declaration, Mr. Young set forth his credentials as an expert in fuel assembly manufacture. In a supplemental Declaration, dated April 6, 2006, Mr. Young specifically stated in paragraph 7 that Westinghouse's test results have shown that the double chamfered inlet of the instant invention has been found not to adversely impact the benefit of the venturi profile in the bottom nozzle coolant flow holes, but provides a significant manufacturing savings over the normal venturi gradient profile between the inlet and outlet of the venturi flow holes. In refusing to give patentable weight to Mr. Young's

statements, the Examiner is substituting his opinion for the opinion of an expert. In the Board of Patent Appeals and Interferences decision in *Ex parte Bruce A. Green and Gary W. Zlotnick* (Appeal No. 94-161A) the Board stated, “The Examiner’s opinion to the contrary is just that, opinion, which the Examiner erroneously substitutes for that of an expert in the art” citing *In re Zeidler*, 682 F 2d 961, 967, 215 USPQ 490, 494 (C.C.P.A. 1982). Furthermore, Section 7 of Mr. Young’s supplemental Declaration as well as many of the other sections of the Declaration are not merely statements of opinion, but are sworn statements of fact. This alone should be a basis for re-opening prosecution if the Panel of Review determines that all the claims are not allowable.

Objections Raised Under 35 U.S.C. §112

There are many 35 U.S.C. §112 rejections that should have been resolvable during prosecution. Applicants have made numerous attempts to try and satisfy the Examiner’s concerns, to no avail, and the Examiner has offered no suggestions other than to restrict the claims to picture claims of the preferred embodiment. For example, the Examiner objects to the phrase “a series of a plurality of” appearing in Claims 1 and 12. The Examiner asserted that the phrase was based upon a non-enabling disclosure because the disclosure of the preferred embodiment only shows two inlet chamfers and the language was so broad as to read on a curved inlet of a venturi shown in the prior art of record. To support this rejection, the Examiner asserted that a curve is made up of an infinite number of tangential lines which would each be discrete and at different angles. Applicants strongly disagree. While the tangent to any point on a curve might be a straight line, the point on a curve is certainly not discrete, but melds into its adjacent points to form the curved surface. The specific language in Claim 1 calls for “concentric countersinks of different included angles and depths into the coolant flow through hole”. It is not a reasonable interpretation to call that a curved flared end. Similarly, the language of Claim 12 calls for “a series of a plurality of straight, discrete, adjacent chamfers with each adjacent chamfer at a different angle than another adjacent chamfer relative to the axial direction of said fuel rods”. It would not be a reasonable interpretation to call that a curve as well. Additionally, in paragraphs 5, 6, 7a, 7c and 7d, the Examiner has objected to the claim language either as new matter or as not having a recognizable meaning. To try and satisfy the Examiner’s objections, even though Applicants disagreed, Applicants attempted to modify the claims to claim the same subject matter in different terms. The terms are readily recognizable and understood in the mechanical art and are clearly supported by the drawings and the specification, though different language is employed in some of the claims than is used in the specification to describe the same thing.

The Examiner also incorporated by reference the rejections in Sections 3A, 3B, 4A, 4B,

5B and 5C. Sections 3A and 3B are objections to the recitation of the angles of the chamfers which are stated to be new matter. However, the angles of the chamfers are clearly shown in the drawings in Figures 5 and 6 and are set forth on page 9 of the specification. Accordingly, these objections appear groundless. The objections raised in paragraphs 4A and 4B are based on a non-enabling disclosure of the same subject matter and appear groundless for the same reason. The objections raised in paragraphs 5B and 5C have to do with the phrases “a series” and “a plurality” and have been addressed above.

Rejections Under 35 U.S.C. §103(a)

The three-prong test required for finding a *prima fascia* case of obviousness under 35 U.S.C. §103(a) is: First, there must be some suggestion or motivation, either in the references themselves or the knowledge of one of ordinary skill in the art, to modify the references or to combine reference teachings; Second, there must be a reasonable expectation of success; and Finally, the prior art references must teach or suggest all the claim limitations. Each of these three prongs must be found in the prior art, and not based on Applicants disclosure. *In re Vaeck*, 947 F 2d 488, 20 U.S.P.Q 2d 1438 (Fed. Cir. 1991); M.P.E.P. 2142.

The initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done. “To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Board of Patent Appeals and Interferences 1985); M.P.E.P. 2142.

In Section 7 of the previous Office Action, Claims 1, 2 and 7-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Shallenberger in view of any of U.S. Patents 4,997,621, 5,528,640, 5,473,650 and 5,488,634, all of which are to Johansson et al. In paragraph 10 of the previous Office Action, Claims 4, 6 and 13-17 were similarly rejected as unpatentable over Shallenberger as modified by the above noted Johansson et al references and further in view of the teachings of the Mechanical Engineering Handbook. The substance of the Examiner’s arguments, as understood, is that the Johansson references disclose an inlet with rounded corners that can be thought of as being made up of an infinite number of discrete segments or chamfers. However, *arguendo*, even if one was to take that position, the chamfers would not be straight and would create an even greater machining problem than Westinghouse encountered with the Shallenberger design, in trying to obtain uniform hydraulic performance. Each of the Johansson references is directed to a boiling water reactor which has a very different hydraulic environment than a pressurized water reactor for which Applicants’ claims are now

limited to. None of the Johansson coolant inlets to the lower tie plate show a double or multiple chamfer design with the chamfers being discrete and straight. While Shallenberger is directed to a lower nozzle for pressurized water reactor, it only shows a single inlet chamfer and no outlet chamfer. Thus, the Examiner has failed to meet his burden of establishing a *prima fascia* case with regard to the rejection in paragraph 7 of the previous Office Action in that while the Johansson et al. references provide rounded corners at their inlets and outlets, neither of the references teach the flaring at the lower face of a plate comprising a series of a plurality of concentric countersinks of different included angles and depths into the coolant flow through holes as claimed in Claim 1. Nor do they disclose a flaring of the lower face of the plate which comprises a series of a plurality of straight, discrete, adjacent chamfers with each adjacent chamfer at a different angle than another adjacent chamfer relative to the axial direction of the fuel rods, as claimed in Applicants Claim 12. Furthermore, Claim 2 further distinguishes for the individual limitation that it introduces, i.e., the combination of an inlet formed from the concentric countersinks and an outlet formed from a chamfer.

In paragraph 10 of the previous Office Action, Claims 4, 6 and 13-17 were rejected as above, and further in view of The Engineering Handbook, McGraw Hill. Claim 4 distinguishes for the reasons noted above. Claim 6 sets forth the specific angles of the chamfers with regard to the axis of flow, which is neither described, taught or shown in any of the Johansson et al. references, nor described in the Mechanical Engineering Handbook. Claim 13 is an independent claim that calls for at least some of the coolant flow through holes having a discrete double chamfered inlet with adjacent chamfers at different angles to the axial direction of the fuel rods, which is neither described, taught or shown in any of the Johansson references or in the Mechanical Engineering Handbook. The Mechanical Engineering Handbook section the Examiner cited deals with relative discharges through nozzles and makes short references to a venturi meter. The corresponding passages discuss the velocity head and flow though different nozzles. On page 3-63, the reference discusses the value of an average good, smooth, rounded orifice as compared to one of poor curvature, with one of poor curvature causing contraction and cross currents with a significantly lower Hamilton Smith's coefficient. On page 3-64, the reference discusses that rounding or beveling a sharp upstream edge even slightly increases the discharge of an orifice. On the same page, the sections on "Obtainable Precision" and "Submergence, or Discharge Under Water" show that the upstream environment of the orifice significantly affects the discharge and flow characteristics. Nothing in the cited text would lead one of ordinary skill to apply a venturi design to the lower nozzle of a fuel assembly, nevertheless a double chamfered inlet and chamfered outlet. Furthermore, none of the references teach the impact of such a design on the manufacturing process.

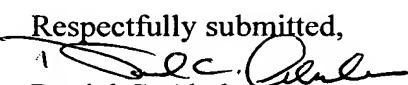
In paragraph 9 of the most recent Office Action, Claims 1, 2, 4 and 6-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shallenberger in view of either the Mechanical Engineering Handbook, CRC Press LLC, 1999 (1), or the Industrial Burner's Handbook, CRC Press LLC, 2003 (2), or the Mechanical Engineering Handbook, 6th edition, McGraw Hill Book Company, Inc. 1958 (3) and further in view of either Mechanical Engineering Handbook, 6th edition, McGraw Hill Book Company, Inc., 1958 (3) or Tucker (4).

Reference publication 1 provides a brief discussion of the discharge coefficients through venturis, stating that a conical diffuser section downstream from the throat gives excellent pressure recovery. There is no mention of how the discharge from the venturi will be affected by the downstream environment. The reference publication 2 discusses the induction process in industrial burners that has no relevance to this invention and appears to not add anything to that already discussed. The Mechanical Engineering Handbook has been discussed previously. While Tucker et al. describes one embodiment, with regard to Figure 15 and the corresponding explanation in the paragraph spanning columns 17 and 18, that has a double chamfered inlet, the Tucker embodiment is described in the context of an apparatus for measuring flow rate and/or viscosity of a liquid in a laminar environment that does not take into account the flow characteristics of a liquid when it exits the device. The Tucker et al. reference is concerned with maintaining a laminar flow in an elongated fluid passage within the device with two parallel opposed sides and a flared entry portion leading to a portion of constant cross section. Accordingly the design of the Tucker et al. reference does not provide any teaching or suggestion of the benefits of such an inlet in the context of an inlet of a flow through hole in the bottom nozzle of a pressurized water reactive fuel assembly.

Accordingly, it is respectfully believed that Applicants' claims, as currently amended, patentably distinguish over the cited references, considered either singly or in combination, in that the cited references fail to disclose or suggest all the elements of Applicants' claims either expressly or inherently, nor do they provide the incentive for combining the teachings that they do provide.

In view of the foregoing arguments, Applicants respectfully submit that the Examiner has not met the requirements of establishing a *prima fascia* case of obviousness under 35 U.S.C. 103(a), and even if that case was met, it is properly rebutted by the Declarations of Michael Y. Young.

Respectfully submitted,



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